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10/620,329	07/14/2003	Stephen F. Brown	021318-000610US	7952

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EXAMINER

VO, TUNG T

ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
12/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/620,329

Applicant(s)

BROWN ET AL.

Examiner

Tung Vo

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 45-48 and 56-63 is/are pending in the application.
- 4a) Of the above claim(s) 1-44 and 49-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 45-48, 58-63 is/are rejected.
- 7) ☒ Claim(s) 56 and 57 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/18/2007 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 45-48 and 58-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vetro et al. (US 7,170,932) and in view of Panusopone et al. (US 6,647,061).

Re claim 45, Vetro discloses an apparatus (fig. 17) adapted to transcode an incoming bitstream coded in a first hybrid video codec (1703 of fig. 17) to an outgoing bitstream coded in a second hybrid video codec (1704 of fig. 17), the apparatus comprising:

a variable length decoder (1703 of fig. 17) having:

an input (1701 of fig. 17) adapted to receive the incoming video bitstream;

a first output (1750 of fig. 17) providing frequency domain image information associated with a first macroblock; and

a second output (1765 of fig. 17) providing a plurality of first motion vectors associated with the first macroblock;

an inverse quantization unit (1720 of fig. 17 coupled to the first output of the variable length decoder;

an inverse transform unit (1730 of fig. 17) coupled to the inverse quantization unit;

a summation unit (1780 of fig. 17) coupled to the inverse transform unit;

a motion compensation unit (1740 of fig. 17) coupled to the summation unit and the inverse transform unit and adapted to output non-motion compensated spatial image information (intra information would obviously be non-motion compensated spatial image information) associated with the first macroblock. It is noted that the motion compensation unit is well known in the MPEG standard for transcoding, where the motion compensation unit performs compensation of spatial image information to produce motion compensated spatial image information called inter image information and non-motion compensated spatial image information called intra image information. Therefore, one skilled in the art would use the motion compensation unit (1740 of fig. 17) as a switch to output non-motion compensated spatial image information.

a frame storage unit (1760 of fig. 17) coupled to the motion compensation unit (1740 of fig. 17);

a conversion unit (1750 of fig. 17) coupled to the motion compensation unit (1740 of fig. 17), the conversion unit comprising:

a processing unit (1750 of fig. 17, Note the conversion unit comprises down-sampling function as filters; fig. 15 A, col. 13, lines 1-45) adapted to provide spatial image information

associated with a second macroblock as a function (down-sampling method, col. 13, lines 1-2 and 24-35) of the non-motion compensated spatial image information associated with the first macroblock independent of the plurality of first motion vectors associated with the first macroblock;

a motion vector conversion unit (1765 of fig. 17) adapted to convert the plurality of first motion vectors into a plurality of second motion vectors associated with the second macroblock (1770 of fig. 17); and

a variable length encoder (1704 of fig. 17) coupled to the motion vector conversion unit.

It is noted that Vetro does not particularly teach a switch coupled to the summation unit and the inverse transform unit and adapted to output non-motion compensated spatial image information associated with the first macroblock; a frame storage unit coupled to the switch as claimed.

However, Panusopone teaches a switch (530 and 535 of figs. 5A and 5B) coupled to the summation unit (435 of fig. 5A) and the inverse transform unit (420 of fig. 5A) and adapted to output non-motion compensated spatial image information associated with the first macroblock (546, 520, 530 of fig. 5B, non-motion compensation as intra mode); a frame storage unit (450 of fig. 5B) coupled to the switch.

Therefore, taking the teachings of Vetro and Panusopone as a whole, it would have been obvious to one of ordinary skill in the art to modify the switch (530 and 535 of fig. 5B) of Panusopone into the transcoder (fig. 17) of Vetro in order to reducing computations of the transcoder. Doing so would improve the coding efficiency, e.g., coding tools such as direct mode motion compensation, unrestricted motion compensation, and advanced prediction.

Re claim 46, Vetro further discloses the variable length encoder having:

a first input (1750 and 1782 of fig. 17) adapted to receive the image information associated with the second macroblock; and

a second input (1765 and 1770 of fig. 17) adapted to receive the plurality of second motion vectors;

an output (1702 of fig. 17) providing the outgoing bitstream.

Re claim 47, Verto further discloses wherein the first hybrid video codec and the second hybrid video codec support different numbers of motion vectors per macroblock (Motion vectors are different for Inter or Intra blocks are performed by motion compensation, 1770 of fig. 17) and a number of motion vectors supported by the second hybrid video codec is allowed by the second hybrid video codec (1770 of fig. 17).

Re claim 48, Vetro further discloses wherein converting the plurality of first motion vectors into the plurality of second motion vectors comprises: replicating the plurality of first motion vectors to produce the plurality of second motion vectors if the second hybrid video codec supports more motion vectors per macroblock than a number of motion vectors per macroblock supported by the first hybrid video codec (Mapping motion vectors, 1765 of fig. 17); and combining the plurality of first motion vectors to produce the plurality of second motion vectors if the second hybrid video codec supports fewer motion vectors per macroblock than the number of motion vectors per macroblock supported by the first hybrid video codec vectors (fig. 13).

Re claim 58, Vetro further discloses wherein the plurality of second motion vectors are associated with a most recent decoded frame and the first hybrid video codec supports P frames

that do not reference the most recent decoded frame (1740 fig. 17; Note the motion compensation of decoder determines the most recent decoded frame for P frames). and the second hybrid video codec supports P frames that reference the most recent decoded frame, the apparatus further adapted to process the plurality of first motion vectors (1770 fig. 17), wherein the conversion unit is further adapted to scale the plurality of second motion vectors to reference the most recent decoded frame (1750 fig. 17).

Re claim 59, Vetro further discloses wherein scaling the plurality of second motion vectors comprises dividing each component of the plurality of first motion vectors by the number of skipped reference frames plus one to produce the plurality of second motion vectors (Mapping motion vectors, 1766 of fig. 17).

Re claim 60, Vetro further discloses wherein the conversion unit is adapted to convert a P frame encoded in part by the first image information to an I frame encoded in part by the second image information to correct for drift (col. 17, lines 64-65, fig. 17).

Re claim 61, Vetro further discloses wherein the conversion unit is further adapted to convert a P frame encoded in part by the first image information to an I frame encoded in part by the second image information to remain in conformance with a standard associated with the second hybrid video codec (1750 of fig. 17).

Re claim 62, Vetro further discloses wherein the standard is ITU-T Recommendation H.263 and the I frame is encoded if no I frame has been encountered associated with the first image information for a pre-determined number of frames (MPEG standard, col. 6, lines 45-55).

Re claim 63, Vetro further discloses wherein the pre-determined number frames is 131(MPEG standard inherently has 131 frames).

Allowable Subject Matter

3. Claims 56 and 57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of records does not particularly disclose the image information associated with the first macroblock encodes a first portion of a first frame comprising a first frame size; the image information associated with the second macroblock encodes a second portion of a second frame comprising a second frame size; the first frame size is not supported by the second hybrid video codec, and converting the plurality of first motion vectors into a plurality of second motion vectors comprises: determining the second frame size to be a smallest frame size allowed by the second hybrid video codec that is larger than the first frame size; centering the second frame on the first frame; and for areas of the second frame that lie outside a boundary defined by the first frame size, coding a suitable background color if the first frame is an I frame and coding as not coded macroblocks if the first frame is a P frame as specified in claim 56; and the image information associated with the first macroblock encodes a first portion of a first frame comprising a first frame size; the image information associated with the second macroblock encodes a second portion of a second frame comprising a second frame size; the first frame size is not supported by the second hybrid video codec, and converting the plurality of first motion vectors into a plurality of second motion vectors comprises: determining the second frame size to be a largest frame size allowed by the second hybrid video codec that is smaller than the first

frame size; centering the second frame on the first frame; and cropping the first frame to produce the second frame, ignoring any macroblocks in first the frame that lie outside the boundary defined by the second frame size as specified in claim 57.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nilson (US 5,940,130) discloses video transcoder with by-pass transfer of extracted motion compensation data.

Contact Information

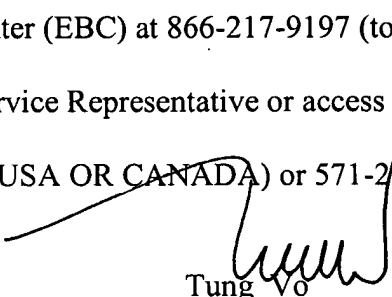
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Tung Vo
Primary Examiner
Art Unit 2621